Surface Combat Systems Center
30 Battle Group Way
Wallops Island, Virginia 23337-5000

Surface Combat Systems Center

Battle Group in the Sand

Pocket Guide

The Wallops Island Advantage

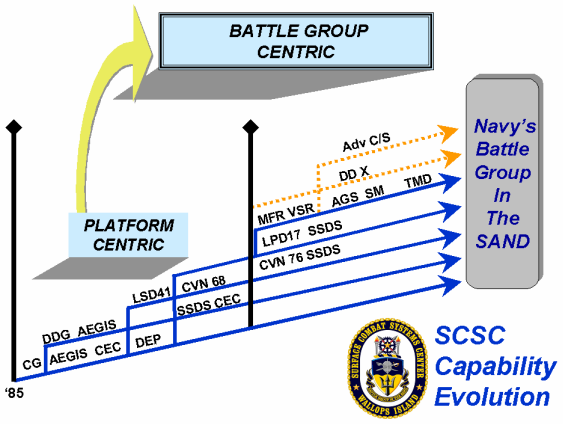
- Co-location with Modern & Future Combat Systems
- Real Maritime Propagation Conditions
- Real Littoral Environment
- Real Military OPAREA with Targets of Opportunity
- Secure and Complete Combat Systems Infrastructure
- Demonstrated Experience with Target Presentations
- Full Access to NASA Launch Range and Airport Services
- Ballistic and Tactical Target Services
- Data Systems Connectivity
- Data Management and Control Support Services
- Navy Base Infrastructure
- Surface Combatant Battle Group Interoperability
- Distributed Engineering Plant Node

Preface

The objective of the Surface Combat Systems Center (SCSC) is to ensure the achievement of PEO TSC requirements while fostering growth consistent with the future direction of the Surface Navy. Current combat systems capabilities are provided by the AEGIS facility and the Ship Self-Defense facility located on Wallops Island. The combat systems and existing ocean range are unique and do not exist anywhere else.

Wallops Island

Because of our command facilities, team personnel, demonstrated capabilities, partnership with the NASA Wallops Flight Facility, and our Atlantic Ocean based maritime location, we present an opportunity for combat systems interoperability testing and warfare integration not available at any other location. New technology programs bring significant benefit to SCSC and the Navy, resulting in a stronger combat system technology base to support combat systems engineering and interoperability. By way of example, the Navy Multi-Function Radar (MFR) program is investing in facility enhancements in support of contractor and government development testing at Wallops Island. We anticipate that additional advanced programs will join our "Battle Group" in the years ahead. These co-located systems will create a unique War Fighting System Development and Integration Capability – the Navy's **"Battle Group in the Sand."**



Notes

Systems, AEGIS Combat Training System, AEGIS Display System, Operational Readiness and Test System, with multiple CICs, computer suites, SSDS MK1 and MK2 systems, associated sensors, and available facilities). Knowledge-based government and contractor personnel operate, maintain, and conduct testing and training.

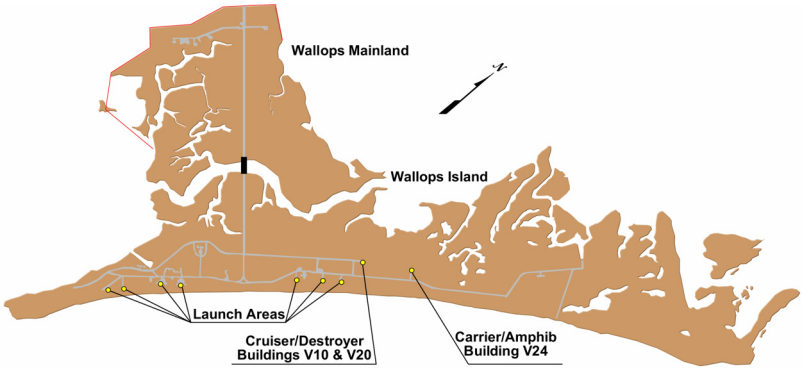
- **Full range support services** through our partnership with NASA, Wallops Island. Services available include range services, tracking radars, launch facilities, target services, and extended down-range potential.

- **Navy base infrastructure**, including personnel support such as medical, travel, financial, quarters, galley, supply, public works, and others.

- **Competitive program costs** resulting from the established full-service support nature of available facilities and personnel both from Navy and our NASA partner.

- Full data **ATM connectivity** with the Navy Distributed Engineering Plant (DEP) national team for battle group and systems interoperability tests or tactical systems training, including full **data systems connectivity** with AEGIS and other defense department agencies (e.g., SIPRNet, APAN).

- **Data Management and Control** support services, including media control, data collection, and transfer support facilities.



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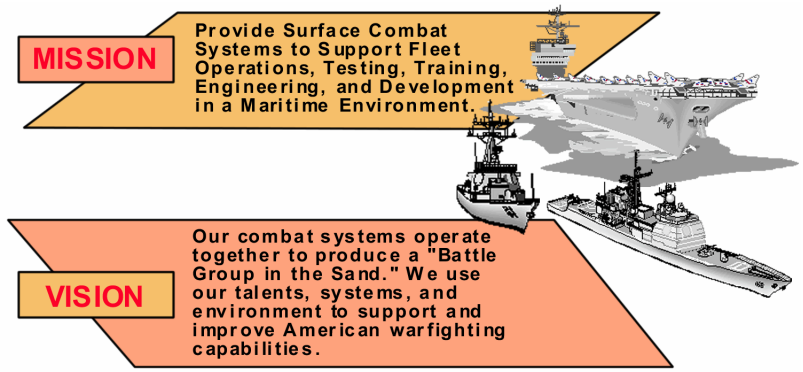


Surface Combat Systems Center (SCSC)

SCSC is a unique powerful combination of geography, airspace, combat systems equipment and personnel. This sophisticated command is located on a barrier island of Virginia's Eastern Shore. Due to the unique location of Wallops Island, a variety of targets can be launched and tracked to intercept. Additionally, a large selection of live support services are available. No other land-based facility exists that can perform all the mission roles assigned to SCSC.

Personnel

SCSC is comprised of a dedicated team of over 400 military, civilian, and contractor personnel working together to provide engineering, training, and base operations support to the Fleet.

Mission Areas

- Lifetime Support Engineering (LSE)
- In-Service Support Engineering (ISE)
- Navy Training
- Ship Self-Defense System (SSDS) integration and testing
- Project Research, Development, Test and Evaluation (RDT&E)
- Battle Group Interoperability
- Theater Missile Defense Systems Development

Airspace

Controlled airspace, managed by Fleet Area Control and Surveillance Facility (FACSFAC) Virginia Capes (VACAPES) and NASA and coordinated by SCSC, permits the observation and execution of challenging operations within and beyond the sight of our radars.

Geography

Wallops Flight Facility, with its active launch capabilities, is composed of three separate parcels of land: Wallops Main Base, Wallops Mainland, and Wallops Island. SCSC has facilities at each of these locations. The geographical location on the Atlantic Ocean overlooking the VACAPES Operating Area (OPAREA) makes it an ideal place to conduct engineering and training exercises with sea clutter and reflectivity. This environment allows unobstructed, uninterrupted engineering and training exercises with various ships and battle groups off the coast of Wallops Island.

Summary

The SCSC Wallops Island Advantage

There are no alternative land-based sites for performing the mission roles assigned to SCSC. Requirements are derived from the OPNAV mission statement and from PEO TSC program objectives. SCSC provides a maritime test environment, operational team, and combat systems of high fidelity to conduct realistic test events in support of LSE activities and the upgrade of tactical computer programs. SCSC provides key services for performing systems Developmental and Operational Tests (DTs and OTs) and for RDT&E of potential system upgrades in all areas of Detection, Control, and Engagement.

The SCSC Wallops Island, Virginia, location provides the best value to the Navy for testing and support of deployed surface combat systems, advanced systems under development, and warfare systems integration (such as systems planned for deployment aboard DD-21, CG-21, CV/CVN, LPD, and other Navy ship programs):

- **Maritime conditions** including radar ducting, sea glint, and clutter with a complete array of representative sea states from calm to severe storms, reflection of radar signals off the water, fog, salt spray, etc.
- **Littoral Mainland Environment** for over-land test scenarios to augment full and complete assessment of sensor or weapons system mission performance.
- Availability of numerous military surface ship and aircraft **targets of opportunity** at no cost in military OPAREAs at sea and over the Chesapeake Bay, as well as the ability to schedule specific targets for particular tests.
- **Demonstrated experience** with target presentations required by program capability proof out and a realistic Fleet operations environment. Suitable for tactical target presentations covering all aspects of combat systems tactical mission roles.
- Secure and complete **combat systems infrastructure** (SPY-1A/B radar, Command and Decision Systems, Weapon Control

SCSC Points of Contact

Director of Combat Systems	(757) 824-7113
Operations Officer	(757) 824-7251
Security Officer	(757) 824-2046
Quarter Deck	(757) 824-2068

SCSC PLAD - SURFCOMBATSYSCEN WALLOPS ISLAND VA

AEGIS CIC Operations

NASA WFF Points of Contact

Chief of Policy and Business Relations	(757) 824-1479
Chief of Range and Mission Management	(757) 824-1955

NASA Rocket Launch from WFF

Combat Systems

SCSC has two unique, multi-functional facilities on Wallops Island. The AEGIS facility is dedicated to the support of all AEGIS cruisers and destroyers. The SSD facility supports amphibious ships and aircraft carriers. SCSC provides high-fidelity combat systems suites with platform specific radars and sensors. The Combat Information Centers (CICs) are nearly exact shipboard representations. SCSC's extensive simulation capabilities allow ships, aircraft, missiles, and other threats to be injected into the live tactical environment.

Sensors

Air/Surface Radars

AN/SPY-1A AN/SPY-1B/D

Surface Surveillance Radars

AN/SPS-55 AN/SPQ-9
AN/SPS-67 AN/SPQ-9B (light weight)
AN/SPS-73(V)13

Air Surveillance Radars

AN/SPS-48E AN/SPS-49(V)7/(V)8
AN/SPS-49A(V)1

Tracking Radars

MK15 CIWS MK95 RNSSMS NATO Sea Sparrow

Navigational Aids

TACAN

Additional Sensors

IFF AN/SLQ-32

Organizations

SCSC works in partnership with our principal mission customers and Navy range and target services providers to enable effective combat systems engineering, training, and testing.

NAVSEA Dahlgren

- LSE for AEGIS baselines and SSDS MK1

NAVSEA Port Hueneme/Dam Neck

- ISE for AEGIS, Advanced Combat Direction System (ACDS), SSDS, and Cooperative Engagement Capability (CEC)

- **Naval Air Warfare Center Aircraft Division (NAWCAD)**
  - ISE for exterior communications
  - VANDAL and BQM target delivery
  - CEC E-2C and LAMPS
- **AEGIS Training and Readiness Center Detachment (ATRCD)**
  - AEGIS Console Operator Course
  - Team Trainers (pre-commissioning and in-service)
- **Other Supporting Organizations**
  - U.S. Coast Guard
  - JHU/APL
  - NOSC-AD
  - Joint Services

Base Operations

SCSC is an operational Navy base, complete with a galley, combined bachelor quarters, family housing, and an exchange. There are several other buildings and facilities available that can serve as test centers, sensor platforms, and office space.

Navy Battle Group Interoperability

Our AEGIS and SSDS Combat Systems, provide a superb environment for conducting live Battle Group level interoperability tests. We can support this effort with the actual Cruiser (CG), Guided Missile Destroyer (DDG), and Aircraft Carrier combat systems and critical CEC and Link-16 networks with which the BG will deploy. The NAWCAD provides E-2C and F/A-18 aircraft, and the VACAPES OPAREA offers a maritime environment for unlimited air and surface operations for manned and unmanned target presentations.

In the future, live shore-based test exercises may become a necessity for BGs that have experienced major upgrades to their combat systems capabilities. In addition, new networks with high information rates must be integrated and interoperable with current systems prior to Fleet delivery. These shore-based tests could become a critical step in the BG deployment D-30 process.

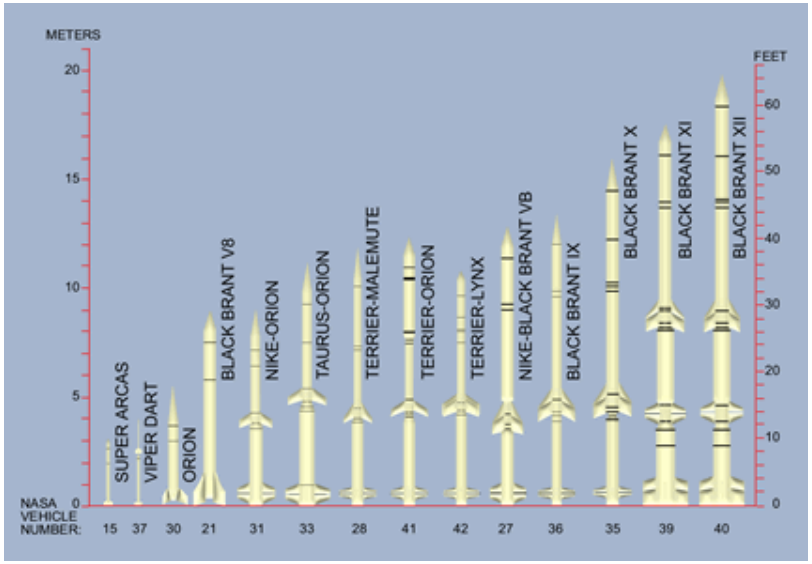
SCSC, together with other shore-based combat systems facilities at the Combat Direction Systems Activity (CDSA), Dam Neck, and the NAWCAD, Patuxent River, can provide live combat systems for all current and future Battle Groups.

NASA Sounding Rocket Launch Vehicles

Among other NASA programs, WFF manages the NASA Sounding Rocket Program. This program offers the opportunity to provide ballistic targets to WFF customers with a variety of targets up to an altitude of 1500Km and to a range of 1000Km. While these are generally ballistic vehicles, some guided rockets are also available.

Developed in support of DoD, the latest rocket now available is the Terrier Lynx, which is planned for use in DDG Theater Defense capability assessment testing.

In addition to the launch vehicles, WFF designs, fabricates, and tests the payload systems for them on-site. Additional targets such as Vandal and BQM-34 and BQM-74 can also be provided by WFF alliances with other organizations.



NASA Sounding Rocket Launch Vehicles

Range Telemetry Systems

NASA Low-Gain Telemetry Antenna System (LGTAS)

Two 8-ft antennas
Frequency range: 1435-1540, 1650-1710, and 2200-2300 MHz

NASA Medium-Gain Telemetry Antenna System (MGTAS)

Two 24-ft antennas
Frequency range: 1400-2400 MHz

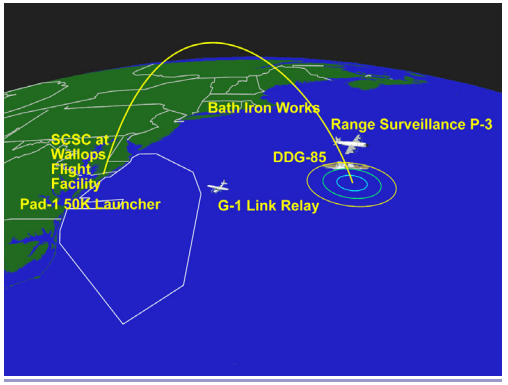
Command Transmitter Systems

Multiple UHF command transmitter systems for command uplink and flight termination.

NASA Telemetry Antenna System

Theater Ballistic Missile Defense (TBMD)

SCSC has an extensive history of support for Navy and Joint TBMD research and development initiatives. Our live combat systems, accessibility to Fleet units, coupled with NASA's ability to launch ballistic missile test targets provide an optimum environment for conducting TBMD exercises with ships at sea. Our facilities have and continue to support new sensor and computer program TBM track-processing improvements. As this mission area continues to evolve, we will expand by installing and activating new and improved Cruiser and Destroyer combat system configurations developed to defend against this threat.



TBMD Exercise

Wallops Island has demonstrated a new ballistic missile target capability with the successful launch of a Terrier Lynx test target. This target, along with our combat systems, and NASA's launch facilities enable us to continue support of RDT&E initiatives and TBM target tracking events with ships at sea.

The Navy's Battle Group in the Sand

With live surface ship combat systems located in a maritime environment adjacent to the VACAPES OPAREA, SCSC is your "Battle Group in the Sand." Our mission tasking is focused on PEO TSC combat systems program development, life cycle engineering,

AEGIS Facility

SSD Facility

Fleet operator/ CIC team training, and in-service engineering. Our capabilities include all Fleet AEGIS and SSDS combat systems and networks in support of naval ship warfare systems interoperability, integration, and deployment readiness.

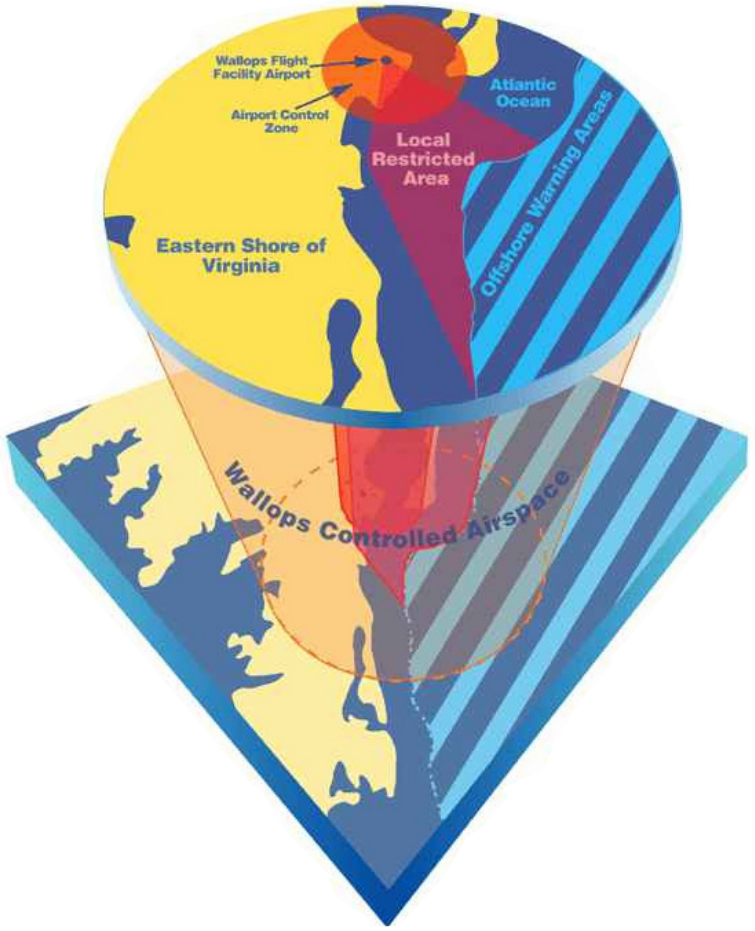
SCSC continues to evolve in mission capability from its AEGIS base. The addition of our new SSD facility complements our AEGIS Cruiser and Destroyer combat systems with Aircraft Carrier and Amphibious combat systems. The co-location of these systems provides a strong environment for Battle Group level integration and interoperability test support.

We can simulate placing the combat systems of a CVN (CVN-68), LSD, and two AEGIS Cruisers or Destroyers "at sea" at the same time, anywhere in the world. This capability is being enhanced in the future with additional CVN (CVN-69/76), LPD, and LHD combat systems. We have the Fleet operators necessary to exercise control of aircraft and surface combatants throughout the OPAREA that adjoins the coasts of Virginia and Maryland. We have high-speed secure voice, satellite communications, video, and data connectivity with other Navy and DoD organizations and provide a major link to the national Distributed Engineering Plant (DEP) network.

Virginia Capes Operating Areas

Located adjacent to the Virginia Capes Operating Areas (VACAPES OPAREA), our Atlantic Ocean based maritime environment presents unique opportunities for combat systems interoperability testing and warfare integration not otherwise available ashore. With our NASA Wallops Flight Facility partnership range assets and our direct participation in military VACAPES activities, we provide AEGIS SPY easterly coverage and 360° rotating sensor surveillance. Controlled airspace over land and water provides a true littoral test environment. The resulting capability is unmatched, supporting extensive live and passive services to the Surface Navy and Deploying Battle Groups.

For more information, visit the NASA Wallops Flight Facility Web Site http://www.wff.nasa.gov/pages/researchairport.html



Wallops Airspace

Wallops Airport

The NASA research airport is available to support research, development, test, and evaluation activities.

Control Tower

Hours of operation are 0700 to 1730 Monday through Friday and as required to support specific missions. UNICOM services are available when Control Tower is unmanned.

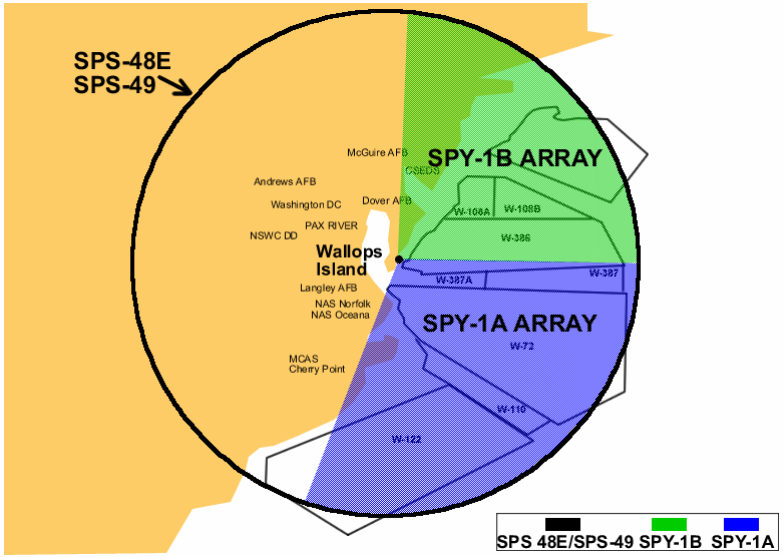
Instrumentation

The airfield uses FAA-approved instrument approaches to the airport through the Very High Frequency Omni-directional Range (VOR) approach using Snow Hill, Maryland's, VORTAC station, and a VOR/Direction Measuring Equipment (DME) approach using Salisbury, Maryland's, VOR/DME station. The research airport features Precision Approach Path Indicators (PAPI).

Runways

04/22	8750 feet by 150 feet
10/28	8000 feet by 200 feet
17/35	4820 feet by 150 feet

Wallops Airfield



Radar Coverage

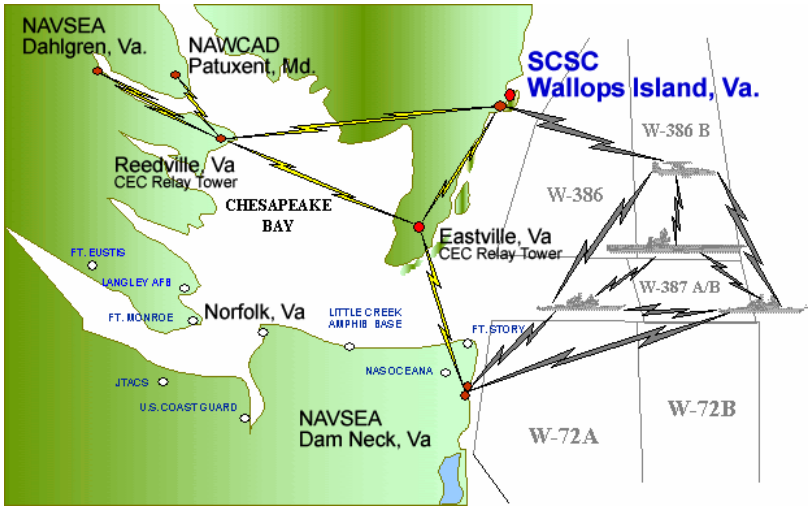
SCSC CIC/LAB Capabilities

Combat Systems

The AEGIS facility currently replicates with fidelity all the AEGIS cruisers and destroyers active in the Fleet today and can support four independent combat system laboratory configurations. We anticipate that future capacity initiatives will enable additional standalone operations for a minimum of six simultaneous AEGIS labs. SCSC labs are regularly used in Battle Group Interoperability testing.

Our SSD facility replicates the SSDS MK 1 System deployed aboard LSD-41 class ships and supports development of the SSDS MK 2 systems planned for Aircraft Carriers, LPD and LHD ship classes. The SSD facility can simultaneously support two lab configurations.

Both Wallops facilities have Control Centers that can be configured to support test and training operations in conjunction with other lab test or system development configurations.



Land Based Test Network

SCSC Cooperative Engagement Capability (CEC)

Both the AEGIS and SSDS facilities are CEC capable and configured to function as independent CEC nodes with each other and with ships operating in the VACAPES OPAREA. Our facilities can also interface with the CDSA Dam Neck ACDS system and combat systems at NAVSEA Dahlgren and the NAWCAD Patuxent, Maryland, via relay towers in Eastville and Reedville, Virginia, for both CEC and Link 16 interoperability testing. SCSC is capable of establishing CEC and Link 16 networks with other land-based facilities via the DEP and AEGIS Broadcasting Network (ABN).

Combat Systems Connectivity

The facilities are connected by fiber optic and copper cables for secure and unclassified exchange of tactical and management support information and sharing of unique data sources (e.g., radars and other sensors). SCSC is networked to other DoD tactical data exchange facilities through numerous data pipes, such as the Navy DEP network and other secure networks.

NASA Sensors

Tracking Radars:

Two RIR-716 C-band radars (radars 3 and 18).
Multiple transportable RIR-778C radars.
AN/FPQ-6 C-band fixed radar system on Wallops Mainland.

Surveillance Radars:

Marine Pathfinder X-band radar system on Wallops Island.
AN/APS-128E and AN/APS-80B(V) X-band airborne surveillance radar systems can be installed on contract aircraft.

Target Services

Air Targets

AQM-37C, BQM-34S, and BQM-74E (From nonorganic A/C)
Dual Vandal Launcher
BQM-34/74 Launchers
40mm Projectiles
Towed Targets
TBM Targets

Surface Targets

Towed Targets
Sea borne Powered Target (SEPTAR)
Surface Target Balloon (Killer Tomato)
Remote Controlled Target Ski (Robo Ski)

Vandal Target Launch

Target Control System

BQM Guidance and Control (MAGICC)

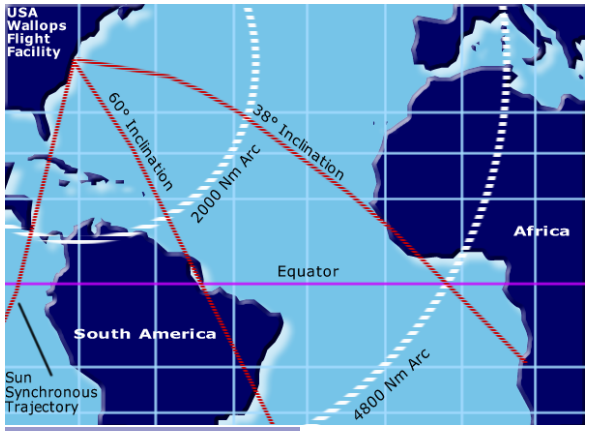
NASA Wallops Flight Facility (WFF)

The NASA WFF complements our combat systems with a large number of additional capabilities such as an extended launch range, a research airport, and several launch-related services.

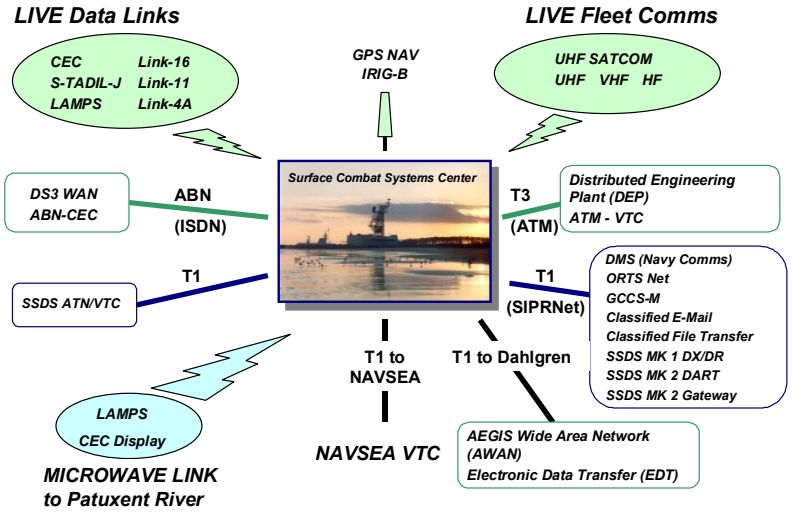
Launch Range

The WFF Launch Range has numerous launchers, instrumentation, and supporting facilities. The range does not have down-range boundaries. Launches take place from Wallops Island and are planned such that impacts are within coordinated areas of the ocean. Wallops Range Safety predicts appropriate ship and aircraft hazard areas for launch operations that are coordinated with appropriate regulatory agencies for each mission. Essentially, the range is only limited by coastal land masses or by the maximum range of tracking resources. Launches in excess of 1000 NM are possible.

Extended launch range capability has become essential to the development and test of long-range missiles and other advanced projectiles, as well as the more realistic presentation of threat target profiles. Capability is available at Wallops Island for the Navy to conduct exercises that exceed the capability and safety margins of other ranges. These factors, together with the ability to support routine Fleet operations involving space, air, surface, and subsurface assets, make Wallops a highly attractive location for meeting the requirements of Navy missile program development progress.



WFF Launch Range



AEGIS and SSDS Connectivity

Fleet Training and Target Simulation

The following systems are available to support Fleet Exercises:

Training

- Battle Force Tactical Training (BFTT)
- AEGIS Combat Training System (ACTS)
- On-Board Training (OBT)
- Electronic Warfare On-Board Trainer (EW OBT)
- Battle Force Electronic Warfare Trainer (BEWT)

Simulation

- Sonar Environmental Group Simulator (SEGS II)
- ASWCS Multi-Environment Simulator (AMES)
- Distributed Sensor Simulation System/Multi-Link System Test/Training Tool (DS3/MLST3)
- AEGIS Combat System Interface Simulator (ACSIS)
- Vertical Launching System Hybrid (VLS) Hybrid

Operations Support

Control Center (AEGIS)	Control Center (SSDS)
Air Services Scheduling	Certified Military Radar Unit
OPAREA Coordination and Scheduling	Operations Conductor
Anti-Submarine Tactical Air Control	Air Intercept Control
Project Coordinators and Engineers	Boat Control
Communications Support	CIC Operator Support

Command, Control, Communications, Computers, and Intelligence (C4I)

Data Link Capabilities

3 Link 16 networks simultaneously
(Satellite TADIL-A and Satellite TADIL-J capable)
- 2 AEGIS
- 1 SSDS MK 2

Link 11
Link 4A
LAMPS MK III Hawk Link
CEC USG-2

Data Link Monitoring Capabilities

LMS 4/11/16

Radio Capabilities

5 VHF Transceivers
22 UHF Transceivers (Including AUTOCAT)
12 HF Transmitters
18 HF Receivers
4 SATCOM WSC-3 Transceivers
Complete naval message handling facility

Network Capabilities

CEC	SIPRNET
OTCIXS	EDT(APAN)
GCCS-M	NAVSEA VTC (Secure)
DEP	ATM
LPD-17 ATN	

Remote Tactical Display

A remote air and surface tactical picture can be provided via a Multiple Link System Test and Training Tool (MLST3), with Navy operators.

Data Recording and Analysis Capabilities

Data Reduction/Analysis and Transfer

AEGIS Data Analysis and Reduction (ADAR)
Electronic Data Transfer (to APAN)
SIPRNET
SSDS MK 1 DX/DR
SSDS MK 2 Data Analysis and Reduction Tool (DART)

Audiovisual Display and Recording

Live display of console activity from any of the four Combat Information Centers or the Operational Control Center.
Live video feeds from NASA range control center, launch pad monitors, and target control system.

Data Center

Naval Warfare Publications Library
Classified material storage and shipping
Software management
Material can be transferred between SCSC and at-sea units via log helicopter using NASA flight facilities.